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NOTICE OF ALLOWANCE AND FEE(S) DUE

23446 7590 03/06/2009

MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER

CHOW, CHARLES CHIANG

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 03/06/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,433	03/26/2004	Min Chuin Hoo	15575US02	9795

TITLE OF INVENTION: METHOD AND SYSTEM FOR ANTENNA SELECTION DIVERSITY WITH PREDICTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/08/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

23446 7590 03/06/2009
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,433 03/26/2004 Min Chuin Hoo 15575US02 9795

TITLE OF INVENTION: METHOD AND SYSTEM FOR ANTENNA SELECTION DIVERSITY WITH PREDICTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/08/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHOW, CHARLES CHIANG	2618	455-277100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			CHOW, CHARLES CHIANG	
			ART UNIT	PAPER NUMBER
			2618	
DATE MAILED: 03/06/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 440 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 440 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/810,433

Applicant(s)

HOO ET AL.

Examiner

CHARLES CHOW

Art Unit

2618

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/3/2009.
2. ☒ The allowed claim(s) is/are 1-33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413)
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Detailed Action

1. This office action is for the amendment filed on 2/3/2009.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/3/2009 has been entered.

Allowable Subject Matter

3. The following is an examiner's statement of reasons for allowance:

Claims 1-33 are allowable over the prior art of record. The prior arts fail to teach the allowable features, singly, particularly, or in combination or rendering obviousness.

The cited prior arts fail to disclose the allowable limitations as amended in the independent **claims 1, 12, 23**, as underlined in below, for the

to determine a selection index value for each one of said portion of said plurality of antennas, wherein each said selection index values indicates a number of instances, over a determined number of said received plurality of frames; and select one or more candidate starting antennas by comparing each of said plurality of selection index values to a majority polling threshold value.

The dependent claims are also allowable due to their dependency upon the allowable independent claims above and the having additional claimed features.

claim 1. (currently amended) A method for controlling an antenna system, the method comprising:

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collecting information associated with a plurality of frames received by a portion of a plurality of antennas; '

selecting a receiving antenna from said portion of said plurality of antennas for each one of said received plurality of frames;

determining a selection index value for each one of said portion of said plurality of antennas wherein each of said selection index values indicates a number of instances that a corresponding one of said each one of said portion of said plurality of antennas is selected as said receiving antenna over a determined number of said received plurality of frames; and

selecting one or more candidate starting antennas by comparing each of said plurality of selection index values to a majority polling threshold value.

claim 12. (currently amended) A computer readable medium having stored thereon, a computer program having at least one code section for controlling an antenna system, the at least one code section being executable by a computer for causing the computer to perform steps comprising:

collecting information associated with plurality of frames received by a portion of a plurality of antennas;

selecting a receiving antenna from said portion of said plurality of antennas for each one of said received plurality of frames;

determining a selection index value for each one of said portion of said plurality of antennas, wherein each of said selection index values indicates a number of instances that a corresponding one of said each one of said portion of said plurality of antennas is selected as said receiving antenna over a determined number of said received plurality of frames; and

selecting one or more candidate starting antennas by comparing each of said plurality of selection index values to a majority polling threshold value.

claim 23. (currently amended) A system for controlling an antenna system, the system comprising:

at least one processor that enables collection of information associated with a plurality of frames received by a portion of a plurality of antennas;

said at least one processor is operable to select a receiving antenna from said portion of said plurality of antennas for each one of said received plurality of frames;

said at least one processor is operable to determine a selection index value for each one of said portion of said plurality of antennas, wherein each said selection index values indicates a number of instances that a corresponding one of said each one of said portion of said plurality of antennas is selected as said receiving antenna over a determined number of said received plurality of frames; and

said at least one processor is operable to select one or more candidate starting antennas by comparing each of said plurality of selection index values to a majority polling threshold value.

The closest prior art, **Hurley [US 6,891,901 B2]**, teaches the repeating for four times to collect the packet samples on each antenna, in steps 4-6, step 7 [col. 7, lines 49-53], for the antenna selection via switch 26/Dsp 42 [col.7, lines 3-17], with plural of frames [col. 2, lines 57-63], the determining a best antenna, for having the highest weighted average, col. 7, lines 554-65, according to bit error [col. 8, lines 6-9],

Shinoda [JP-20040007145] Shinoda-'145 teaches the selecting antenna based on the index value V of each antenna, to judge the antenna selection of antennas 101/102 [parag. 0005-00011], the index value are the receiving intensity, an agc gain, an error rate [parag. 0016, 0010], memorizing index value V & comparing with threshold [parag. 0020-0026, 0014].

Ogino et al. [US 6,731,905 B2] teaches the antenna selection is based on the quality evaluation Index representing, indicating, the quality of signal reception with Rssi, data error rate or an other value [col. 8, line 60 to col. 9, line 9], the antenna selector170 selects antenna from antenna 17i1-17n [Fig. 4/col. 7, lines 41-47], the selecting optimum antenna in [col. 2, lines 22-29].

Todd [US 6,118,773] teaches the comparing the BER with threshold 20, & the comparing hysteresis-count with M, for incrementing the hysteresis-count, in step 440 [Fig. 4b & its description in the specification], but fails to teach the antenna selection is actually activated based on the comparison of Hysteresis-count and the threshold M, for the claimed comparing each of said plurality of selection index values to a majority polling threshold value.

Other prior arts in below are also considered, but they fail to teach the above allowable features.

Kasami et al. [US2005/0113,038 A1] teaches the diversity antenna control

[abstract & figure in cover page, having a later filing date 10/21/2004].

Nguyen [US 7,039,356 B2] teaches the antenna selection base one the winner weight, having sum 8200 [steps 914-924, Fig. 9/Fig. 8, & its corresponding description in the specification].

Banister [US 6,456,647 B1] teaches the antenna selection is based on the weight factor derived from simple, single tap, first order, IIR filter or the response of FIR, col. 7, lines 14-23 & col. 13, lines 24-34; it is well known that IIR filter or FIR filter is implemented in software code].

Kasami et al. [US2005/0113,038 A1] teaches the diversity antenna control [abstract & figure in cover page] having a later filing date 10/21/2004 than applicant's effective filing date of 2/24/2004.

Ishihara et al. [US 2006/0234,776 A1] teaches the averaging the reception levels of antenna for the received frames for a predetermined number of times to obtain the mean value of the reception level, to decide the antenna selection [paragraph 0050-0052].

Other prior arts are also considered. They are: **Davis et al. [US 5,175,878], Meredith et al. [US 5,701,596], Meredith et al. [US 5,913,177], Narita et al. [US 6,385,464], Vendryes [US 6,546,259], Akerberg [US 6,553,078 B1], Xu [US 2004/ 0203,550 A1], Menich et al. [US 4,704,734].**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Charles Chow/
Examiner, Art Unit 2618
February 19, 2009.

/Duc Nguyen/
Supervisory Patent Examiner, Art Unit 2618